

No.

8500181



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Texas Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT (STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT

'TAM 107'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D. C. this 31st day of October in the year of our Lord one thousand nine hundred and eighty-eight.

Attest:

Kenneth H. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Richard E. Linn
Secretary of Agriculture



U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

FORM APPROVED: OMB NO. 0581-0055

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) Texas Agricultural Experiment Station		2. TEMPORARY DESIGNATION	3. VARIETY NAME TAM 107
4. ADDRESS (Street and No. or R.F.D. No., City, State, and Zip Code) College Station, Texas 77843		5. PHONE (Include area code) 409-845-8484	FOR OFFICIAL USE ONLY PVPO NUMBER 8500181
6. GENUS AND SPECIES NAME <u>Triticum aestivum</u> L.	7. FAMILY NAME (Botanical) Gramineae		FILING DATE July 29, 1985 TIME 2:00 <input type="checkbox"/> A.M. <input checked="" type="checkbox"/> P.M.
8. KIND NAME Wheat	9. DATE OF DETERMINATION 8-25-82		FEE RECEIVED AMOUNT FOR FILING \$ 1,800 DATE 7/29/85 AMOUNT FOR CERTIFICATE \$ 200 ⁰⁰ DATE Sept. 20, 1988
10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.) Official Public Agricultural Research Agency of the State of Texas			
11. IF INCORPORATED, GIVE STATE OF INCORPORATION NA			12. DATE OF INCORPORATION NA
13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS Kenneth B. Porter, Texas A&M University Research & Extension Center, 6500 Amarillo Blvd. West, Amarillo, Texas 79106.			

PHONE (Include area code): 806-378-5763 or 359-5401

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED

a. Exhibit A, Origin and Breeding History of the Variety (See Section 52 of the Plant Variety Protection Act.)

b. Exhibit B, Novelty Statement.

c. Exhibit C, Objective Description of Variety (Request form from Plant Variety Protection Office.)

d. Exhibit D, Additional Description of Variety.

e. Exhibit E, Statement of the Basis of Applicant's Ownership.

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See Section 83(a) of the Plant Variety Protection Act.) Yes (If "Yes," answer items 16 and 17 below) No

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? Yes No

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED? Foundation Registered Certified

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.? Yes (If "Yes," give date) No

19. HAS THE VARIETY BEEN RELEASED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES? Yes (If "Yes," give names of countries and dates) No

United States August 9, 1984

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in Section 41, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT 	DATE 7-11-85
SIGNATURE OF APPLICANT	DATE 1

Exhibit A. Origin and Breeding History of TAM 107

In the fall of 1977 the USDA-ARS and the Oklahoma Agricultural Experiment Station released a greenbug resistant wheat-Insave rye translocation germplasm line, 'Amigo'. Amigo was immediately incorporated into the Texas Agricultural Experiment Station breeding program for developing greenbug resistant wheat varieties, and several wheats (including TAM 105 which had not been named or released at that time) were crossed with Amigo in the fall of 1977. The greenbug resistance of Amigo was dominant and easily transferred by backcrossing. Greenbug resistant F_2 plants from the third backcross (BC_3F_2) of several crosses were harvested in the spring of 1980 in the greenhouse at the USDA Conservation and Production Research Laboratory, Bushland, TX. Among these crosses were plants of the pedigree TAM 105*4/Amigo. F_3 seed of selected greenbug resistant F_2 plants were planted in tests to identify which F_2 plants were homozygous for resistance to the greenbug. The greenbug resistance gene of Amigo, which is the source of greenbug resistance used in breeding TAM 107, is very closely linked to a gene for resistance to mildew. We have never observed this linkage to be broken. The F_3 plants were screened for mildew resistance and progeny homozygous for mildew resistance was used as the indicator for homozygosity for greenbug resistance. The recurrent parent, TAM 105, is susceptible to mildew. At the same time, 34 F_3 seed of each plant were planted in a vernalizer. Vernalized F_3 seedlings from populations found to be homozygous for resistance in the screening trials were transplanted to the greenhouse during late summer and seed were harvested in November 1980. Thirty F_3 plants were harvested from the progeny of the F_2 plant 80GH2875, which had the pedigree TAM 105*4/Amigo. Progeny of these plants were planted separately in the field in December. All lines appeared uniform and no

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apparent differences among lines were observed in the field. F₅ seed were harvested from each line in 1981 and bulked to provide 18 pounds of seed for Texas and regional yield trials in 1981-82. The line was tested as TX80GH2875.

Seed increased from TX80GH2875 was named 'TAM 107' and released to producers in August 9, 1984. TAM 107, an awned, semi-dwarf, brown chaff hard red winter wheat was assigned USDA Accession Number PI 495594.

TAM 107 from Texas Foundation Seed has been described as having plants differing in height of two spike lengths from the average canopy height and having up to 0.1% white chaff variants of the described height. A portion of the white chaff variants must be progeny of brown chaff plants heterozygous for brown chaff color in the breeders seed which was found to be free of white chaff variants by the Texas Department of Agriculture Inspectors in the spring of 1984. Spikes with a small number of sterile florets were observed in some fields of TAM 107 at flowering time in 1985. These sterile florets, also a characteristic of recurrent parent TAM 105, are susceptible to outcrossing to other varieties. Greater isolation than normal appears necessary for the increase of foundation seed of TAM 107. Progeny of TAM 107 head rows are being grown within a foundation seed field of TAM 107 in 1985. Those true to type and non-segregating will be individually increased in 1986 and those breeding true to type will be bulked for distribution as foundation seed in 1987.

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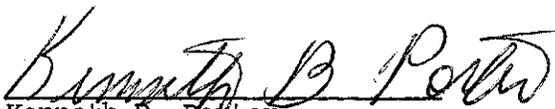
Exhibit A

'TAM 107' is genetically stable and can be maintained and reproduced through seed without changing its characteristics. TAM 107 demonstrated genetic stability for yield potential by its consistent ranking in average yield in the Southern Regional Performance Nurseries grown in the Southern Great Plains in 1982, 1983 and 1984 (27 to 30 locations each year). It ranked no lower than fifth in average yield among 36 to 39 entries included each year. A single seed source was used for the 1982 trials and seed produced each year in the trials were used to plant each subsequent year; thus, the variety was shown to remain stable for yield during this period of three years.

Tam 107 is stable for resistance to biotype C greenbug. It has been invariably resistant to biotype C in all tests during the past seven years.

Entomologists at the Kansas Agricultural Experiment Station at Hays, Kansas showed that TAM 107 was resistant to the wheat curl mite several years ago. This resistant has remained stable to the present date.

TAM 107 has brown chaff and is, as any wheat variety, subject to outcrossing. When outcrosses occur with white chaff varieties, white chaff will appear in the second generation progeny. This is not caused by genetic instability of TAM 107 but is the result of seed production practices and has to be remedied by quality control measures in seed production. Seed of TAM 107 produced with proper isolation will produce plants stable for growth habit (winter), plant height, maturity, seed color and other plant characteristics. All present sources of Foundation seed are stable for the above characters.



7-14-88

Kenneth B. Porter
Professor of Wheat Breeding

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Exhibit B

'TAM 107' most closely resembles 'TAM 105'.

Kenneth B Porter 7-14-88
Kenneth B. Porter
Professor of Wheat Breeding

Exhibit B. Novelty of TAM 107

TAM 107 resembles its recurrent parent TAM 105, but it has distinct differences from TAM 105. TAM 107 is resistant to biotype C greenbug and to powdery mildew while TAM 105 is susceptible. Both TAM 107 and TAM 105 are susceptible to biotype E greenbug. TAM 107 also has resistance to races of stem rust which TAM 105 does not possess. TAM 107 is day neutral or photoperiod insensitive in contrast to TAM 105 which is photoperiod sensitive (long day). Data comparing heading of TAM 107, TAM 105, Sturdy and Chisholm under long and short days in the greenhouse is given in Table 1.

The photoperiod insensitivity of TAM 107 and photoperiod sensitivity of TAM 105 causes variety x location interactions for heading dates of these two varieties as well as for other photoperiod sensitive varieties. These interactions are more fully explained in Exhibit D.

TAM 107 is equal to Scout 66 in winterhardiness. This level of winterhardiness, early maturity, stem rust resistance, powdery mildew resistance, greenbug resistance (biotype C), and satisfactory milling and baking characteristics makes TAM 107 distinct from all other wheat varieties.

Table 1. Days to head from December 26 for vernalized plants transplanted from the field to greenhouse.

Variety	No supplemental light 1/	Supplemental light for 16-hour day 1/
TAM 107	56	44
TAM 105	72	43
Sturdy	54	43
Chisholm	53	42

1/ Average of 5 replications.

11. HEAD:

Density: 1 = LAX 2 = DENSE

Shape: 1 = TAPERING 2 = STRAP 3 = CLAVATE
4 = OTHER (Specify) _____

Awedness: 1 = AWNLESS 2 = APICALLY AWNLETED 3 = AWNLETED 4 = AWNED

Color at maturity: 1 = WHITE 2 = YELLOW 3 = PINK 4 = RED
5 = BROWN 6 = BLACK 7 = OTHER (Specify) _____

08 CM. LENGTH

08 MM. WIDTH

12. GLUMES AT MATURITY:

Length: 1 = SHORT (CA. 7 mm.) 2 = MEDIUM (CA. 8 mm.)
3 = LONG (CA. 9 mm.)

Width: 1 = NARROW (CA. 3 mm.) 2 = MEDIUM (CA. 3.5 mm.)
3 = WIDE (CA. 4 mm.)

Shoulder shape: 1 = WANTING 2 = OBLIQUE 3 = ROUNDED
4 = SQUARE 5 = ELEVATED 6 = APICULATE

Beak: 1 = OBTUSE 2 = ACUTE 3 = ACUMINATE

13. COLEOPTILE COLOR:

1 = WHITE 2 = RED 3 = PURPLE

14. SEEDLING ANTHOCYANIN:

1 = ABSENT 2 = PRESENT

15. JUVENILE PLANT GROWTH HABIT:

1 = PROSTRATE 2 = SEMI-ERECT 3 = ERECT

16. SEED:

Shape: 1 = OVATE 2 = OVAL 3 = ELLIPTICAL

Cheek: 1 = ROUNDED 2 = ANGULAR

Brush: 1 = SHORT 2 = MEDIUM 3 = LONG

Brush: 1 = NOT COLLARED 2 = COLLARED

Phenol reaction (See instructions): 1 = IVORY 2 = FAWN 3 = LT. BROWN
4 = BROWN 5 = BLACK

Color: 1 = WHITE 2 = AMBER 3 = RED 4 = PURPLE 5 = OTHER (Specify) _____

07 MM. LENGTH 03 MM. WIDTH

38 GM. PER 1000 SEEDS

17. SEED CREASE: Similar to Scout 66

Width: 1 = 60% OR LESS OF KERNEL 'WINOKA'
2 = 80% OR LESS OF KERNEL 'CHRIS'
3 = NEARLY AS WIDE AS KERNEL 'LEMHI'

Depth: 1 = 20% OR LESS OF KERNEL 'SCOUT'
2 = 35% OR LESS OF KERNEL 'CHRIS'
3 = 50% OR LESS OF KERNEL 'LEMHI'

18. DISEASE: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

STEM RUST (Races) ^{15B-2} LEAF RUST (Races) ¹⁵¹

STRIPE RUST (Races) LOOSE SMUT

POWDERY MILDEW ¹¹⁻³²⁻¹¹³ BUNT

OTHER (Specify) _____

19. INSECT: (0 = Not Tested, 1 = Susceptible, 2 = Resistant)

SAWFLY APHID (Bydv.) GREEN BUG biotype CEREAL LEAF BEETLE
 OTHER (Specify) _____ HESSIAN FLY RACES: GP A B C
 D E F G

20. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED:

CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant tillering	TAM 105	Seed size	TAM 105
Leaf size	TAM 105	Seed shape	TAM 105
Leaf color	TAM 105	Coleoptile elongation	TAM 105
Leaf carriage	TAM 105	Seedling pigmentation	TAM 105

INSTRUCTIONS

GENERAL: The following publications may be used as a reference aid for the standardization of terms and procedures for completing this form:
(a) L.W. Briggles and L. P. Reitz, 1963, Classification of Triticum Species and Wheat Varieties Grown in the United States, Technical Bulletin 1278, United States Department of Agriculture.
(b) W.E. Walls, 1965, A Standardized Phenol Method for Testing Wheat Seeds for Varietal Purity, contribution No. 28 to the handbook of seed testing prepared by the Association of Official Seed Analysts. (See attachment.)

LEAF COLOR: Nickerson's or any recognized color fan should be used to determine the leaf color of the described variety.

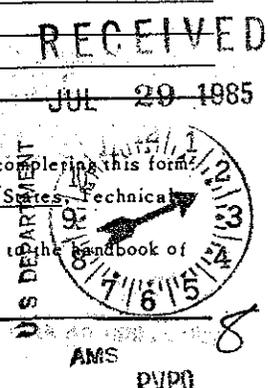


Exhibit E. Basis of Ownership of TAM 107 by the Texas Agricultural Experiment
Station

Ownership is based on the fact that crosses and backcross and screening tests for greenbug resistance in successive backcrosses were made solely by Texas Agricultural Experiment Station personnel. TAES increased and provided the first seed for the evaluation in both Texas and regional evaluation trials. The first quality evaluations were made by TAES. Breeders seed and foundation seed was increased by the Texas Agricultural Experiment Station.